

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

SYNGENTA PARTICIPATIONS AG
Intellectual Property
P.O. Box
CH-4002 Basel
SUISSE

Date of mailing (day/month/year)

12 April 2002 (12.04.02)

Applicant's or agent's file reference

S-31147A

IMPORTANT NOTIFICATION

International application No.

PCT/EP00/08994

International filing date (day/month/year)

14 September 2000 (14.09.00)

1. The following indications appeared on record concerning:

☒

the applicant

☒

the inventor

☐

the agent

☐

the common representative

Name and Address

STEIMER, Andrea
Solothurnerstrasse 92
CH-4053 Basel
Switzerland
Austria

State of Nationality

CH

State of Residence

CH

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐

the person

☐

the name

☒

the address

☐

the nationality

☐

the residence

Name and Address

STEIMER, Andrea
Langackerstrasse 49
CH-8057 Zürich
Switzerland

State of Nationality

CH

State of Residence

CH

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒

the receiving Office

☐

the designated Offices concerned

☐

the International Searching Authority

☒

the elected Offices concerned

☐

the International Preliminary Examining Authority

☐

other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Akiko KOYAMA

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

SYNGENTA PARTICIPATIONS AG
Patent and Trademark Dept.
Site Rosental
CH-4002 Basel
SUISSE

Date of mailing (day/month/year)

24 January 2001 (24.01.01)

Applicant's or agent's file reference

S-31147A

IMPORTANT NOTIFICATION

International application No.

PCT/EP00/08994

International filing date (day/month/year)

14 September 2000 (14.09.00)

1. The following indications appeared on record concerning:

☐

the applicant

☐

the inventor

☒

the agent

☐

the common representative

Name and Address

BECKER, Konrad
Novartis AG
Patent und Markenabteilung
Agribusiness
Werk Rosental
CH-4002 Basel
Switzerland

State of Nationality

State of Residence

Telephone No.

(41-61) 324 11 11

Facsimile No.

(41-61) 697 85 85

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐

the person

☒

the name

☒

the address

☐

the nationality

☐

the residence

Name and Address

SYNGENTA PARTICIPATIONS AG
Patent and Trademark Dept.
Site Rosental
CH-4002 Basel
Switzerland

State of Nationality

State of Residence

Telephone No.

+41 61 697 86 51

Facsimile No.

+41 61 322 75 32

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒

the receiving Office

☒

the designated Offices concerned

☒

the International Searching Authority

☐

the elected Offices concerned

☐

the International Preliminary Examining Authority

☐

other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

J. Leitao

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

11 May 2001 (11.05.01)

International application No.

PCT/EP00/08994

Applicant's or agent's file reference

S-31147A

International filing date (day/month/year)

14 September 2000 (14.09.00)

Priority date (day/month/year)

16 September 1999 (16.09.99)

Applicant

STEIMER, Andrea et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

22 March 2001 (22.03.01)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Pascal Piriou

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

1C → 1B

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

SYNGENTA PARTICIPATIONS AG
Patent and Trademark Dept.
Site Rosental
CH-4002 Basel
SUISSE

P & TM Agribusiness CP 2.01

29. März 2001

APPL. Data Invoice FTS

CC:

Date of mailing (day/month/year)

22 March 2001 (22.03.01)

Applicant's or agent's file reference

"S-31147A

IMPORTANT NOTICE

International application No.

PCT/EP00/08994 ✓

International filing date (day/month/year)

14 September 2000 (14.09.00) ✓

Priority date (day/month/year)

16 September 1999 (16.09.99) ✓

Applicant

SYNGENTA PARTICIPATIONS AG et al ✓

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
AU,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AG,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,BZ,CA,CH,CN,CR,CU,CZ,DE,DK,DM,DZ,EA,EE,EP,ES,
FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,
MN,MW,MX,MZ,NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
22 March 2001 (22.03.01) under No. WO 01/20010

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

DATA ENTERED

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

DATE: 29. MRZ. 2001 VISUM:

J. Zahra

Telephone No. (41-22) 338.83.38

3897270

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

SYNGENTA PARTICIPATIONS
Patent & Trademark Dept.
Attn. BECKER, Konrad
Site Rosental
CH-4002 Basel
SWITZERLANDINTELLECTUAL PROPERTY
R&T 8.0

29. Juni 2001

APPL. DATA INVOICE REN. PCTIS

C.C:

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing
(day/month/year)

28/06/2001

Applicant's or agent's file reference

S-31147A

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/EP 00/08994

International filing date
(day/month/year)

14/09/2000

Applicant

SYNGENTA PARTICIPATIONS AG

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Mireille Claudepierre

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference S-31147A	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/ 08994	International filing date (day/month/year) 14/09/2000	(Earliest) Priority Date (day/month/year) 16/09/1999
Applicant SYNGENTA PARTICIPATIONS AG		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☒ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/08994

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/82 C07K14/415 C12Q1/68 A01H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CAB Data, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EM_HTG 'Online! EMBL; AC/ID AC005898, 2 November 1998 (1998-11-02) LIN X ET AL.: "Arabidopsis thaliana 'TAMU' BAC 'T6C20' genomic sequence near marker 'g4532'" XP002169552 see nucleotides 18480 to 23370 abstract</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	1,2,4,5, 13

☒ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

13 June 2001

Date of mailing of the international search report

28/06/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Oderwald, H

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/08994

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EM_HTG 'Online! EMBL; AC/ID AC007183, 31 March 1999 (1999-03-31) LIU S X ET AL.: "Arabidopsis thaliana chromosome 1 BAC F9D18 sequence" XP002169553 see nucleotides 2840 to 4200, 47390 to 49050 and 54330 to 56960 abstract</p> <p>---</p>	1,2,4,5, 13
X	<p>DATABASE EM_PL 'Online! EMBL; AC/ID AF104920, 11 November 1998 (1998-11-11) STROWMATT C ET AL.: "The sequence of A. thaliana T9E19" XP002169554 see nucleotides 2260 to 4930 abstract</p> <p>---</p>	1,2,4,5, 13
X	<p>DATABASE EM_PL 'Online! EMBL; AC/ID AF058825, 16 April 1998 (1998-04-16) DANTE M: "The sequence of A. thaliana F7N22" XP002169555 see nucleotides 65080 to 68210 abstract</p> <p>---</p>	1,2,4,5, 13
X	<p>DATABASE EM_PL 'Online! EMBL; AC/ID AC007209, 7 April 1999 (1999-04-07) LIN X ET AL.: "Arabidopsis thaliana chromosome II section 74 of 255 of the complete sequence. Sequence from clones F15011, F1404, T26C18." XP002169556 see nucleotides 33290 to 33900 abstract</p> <p>---</p>	1,2,4,5, 13
A	<p>DATABASE SWALL 'Online! EMBL; AC/ID 065225, 1 August 1998 (1998-08-01) DANTE M: "F7N22.8 protein" XP002169557 abstract</p> <p>---</p>	5

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/08994

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MITTELSTEN-SCHEID ET AL: "Release of epigenetic gene silencing by trans-acting mutations in Arabidopsis" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 95, January 1998 (1998-01), pages 632-637, XP002114098 ISSN: 0027-8424 cited in the application the whole document ---	
A	PASZKOWSKI ET AL: "Plant genes: the genetics of epigenetics" CURRENT BIOLOGY, GB, CURRENT SCIENCE,, vol. 8, no. 6, 12 March 1998 (1998-03-12), pages 206-208-R208, XP002114102 ISSN: 0960-9822 the whole document ---	
P,X	STEIMER ANDREA ET AL: "Endogenous targets of transcriptional gene silencing in Arabidopsis." PLANT CELL, vol. 12, no. 7, July 2000 (2000-07), pages 1165-1178, XP002169551 ISSN: 1040-4651 the whole document ---	1-13
P,X	DATABASE EMBLNEW 'Online! EMBL; AC/ID AB046429, 5 September 2000 (2000-09-05) KOTANI H ET AL.: "Arabidopsis thaliana DNA, chromosome 5 centromere region, clone:F26M13." XP002169558 see nucleotides 4640 to 9600 and 87510 to 89420 abstract & KUMEKAWA N ET AL.: "The size and sequence organization of the centromeric region of Arabidopsis thaliana chromosome 5" DNA RESEARCH, vol. 7, 2000, pages 315-321, ---	1,2,4,5, 13
	---	-/--

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/08994

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p> DATABASE EM_PL 'Online! EMBL; AC AL163975, 17 April 2000 (2000-04-17) JORDAN N ET AL.: "Arabidopsis thaliana DNA chromosome 3, BAC clone T15B3" XP002169559 see nucleotides 2320 to 3000 and 4880 to 6450 abstract ----- </p>	<p>1,2,4,5, 13</p>

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: {1, 2, 4, 6, 8-13 partially}, {3, 5, 7 complete}

A nucleic acid having the formula RA-RB-RC, wherein RB is at least 80% identical to an aligned component sequence of SEQ ID NO: 1-5, 7-9 or 27 (TSI-A) and encodes a protein being at least 85% identical to an aligned component sequence of SEQ ID NO: 10. Methods of selecting a plant, of producing DNA, a kit for the identification of plants comprising said nucleic acids.

2. Claims: {1, 2, 4, 6, 8-13 partially}

same as invention 1 but comprising SEQ ID NO: 6 (TSI-B).

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 00/08994

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

PATENT COOPERATION TREATY

PCT

REC'D 15 JAN 2002
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference S-31147A	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) FOR FURTHER ACTION	
International application No. PCT/EP00/08994	International filing date (day/month/year) 14/09/2000	Priority date (day/month/year) 16/09/1999
International Patent Classification (IPC) or national classification and IPC C12N15/82		
Applicant SYNGENTA PARTICIPATIONS AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 22/03/2001	Date of completion of this report 11.01.2002
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Claes, B Telephone No. +49 89 2399 8429



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/08994

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-17 as originally filed

Claims, No.:

1-13 as originally filed

Sequence listing part of the description, pages:

1-15, as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3,5-13
	No:	Claims	1,2,4
Inventive step (IS)	Yes:	Claims	3,5-13
	No:	Claims	1,2,4
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. the following documents are cited:

- D1: DATABASE EM_HTG [Online] EMBL; AC/ID AC005898, 2 November 1998 (1998-11-02) LIN X ET AL.: 'Arabidopsis thaliana 'TAMU' BAC 'T6C20' genomic sequence near marker 'g4532' XP002169552
- D2: DATABASE EM_HTG [Online] EMBL; AC/ID AC007183, 31 March 1999 (1999-03-31) LIU S X ET AL.: 'Arabidopsis thaliana chromosome 1 BAC F9D18 sequence' XP002169553
- D3: DATABASE EM_PL [Online] EMBL; AC/ID AF104920, 11 November 1998 (1998-11-11) STROWMATT C ET AL.: 'The sequence of A. thaliana T9E19' XP002169554
- D4: DATABASE EM_PL [Online] EMBL; AC/ID AF058825, 16 April 1998 (1998-04-16) DANTE M: 'The sequence of A. thaliana F7N22' XP002169555
- D5: DATABASE EM_PL [Online] EMBL; AC/ID AC007209, 7 April 1999 (1999-04-07) LIN X ET AL.: 'Arabidopsis thaliana chromosome II section 74 of 255 of the complete sequence. Sequence from clones F15O11, F14O4, T26C18.' XP002169556
- D6: DATABASE SWALL [Online] EMBL; AC/ID O65225, 1 August 1998 (1998-08-01) DANTE M: 'F7N22.8 protein' XP002169557
- D7: MITTELSTEN-SCHEID ET AL: 'Release of epigenetic gene silencing by trans-acting mutations in Arabidopsis' PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 95, January 1998 (1998-01), pages 632-637, XP002114098 ISSN: 0027-8424 cited in the application
- D8: PASZKOWSKI ET AL: 'Plant genes: the genetics of epigenetics' CURRENT BIOLOGY, GB, CURRENT SCIENCE, vol. 8, no. 6, 12 March 1998 (1998-03-12), pages 206-208-R208, XP002114102 ISSN: 0960-9822
- D9: STEIMER ANDREA ET AL: 'Endogenous targets of transcriptional gene silencing in Arabidopsis.' PLANT CELL, vol. 12, no. 7, July 2000 (2000-07), pages 1165-1178, XP002169551 ISSN: 1040-4651
- D10: DATABASE EMBLNEW [Online] EMBL; AC/ID AB046429, 5

September 2000 (2000-09-05) KOTANI H ET AL.: 'Arabidopsis thaliana DNA, chromosome 5 centromere region, clone:F26M13.' XP002169558 & KUMEKAWA N ET AL.: 'The size and sequence organization of the centromeric region of Arabidopsis thaliana chromosome 5' DNA RESEARCH, vol. 7, 2000, pages 315-321,

D11: DATABASE EM_PL [Online] EMBL; AC AL163975, 17 April 2000 (2000-04-17) JORDAN N ET AL.: 'Arabidopsis thaliana DNA chromosome 3, BAC clone T15B3' XP002169559

D12: 'Release of epigenetic gene silencing by trans-acting mutations in Arabidopsis', 'MITTELSTEN-SCHEID ET AL.', 'PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US', ", 95//00-01-1998, 632-637,

2. The sequence of D1 has >90% identity with SEQ ID No 1,2,4,5,8, and 9. The sequence of D2 has >90% identity with SEQ ID No 1-5 and 9. The sequence of D3 has >90% identity with SEQ ID No 4,5 and 8. The sequence of D4 has 99,2% identity over 1956 nucleotides with SEQ ID No 7 and 100% over 3122 nucleotides of SEQ ID No. 27. The sequence of D5 has 96,9% identity over 614 nucleotides with SEQ ID No 6.

The above disclosures are prejudicial for the novelty of claims 1,2 and 4.

3. The subject matter of claims 3 and 5-13 appear not to have been rendered obvious by the cited art available before the priority date. The priority claim for the present application has not been checked. Consequently the documents cited in the search report as P,X may be relevant for any claimed subject matter not entitled to priority.

Re Item VIII

Certain observations on the international application

1. Part (b) of claim 8 is vague and undefined and does refer specifically to the sequences as shown useful for executing the method of the claim.

PATENT COOPERATION TREATY

PCT

REC'D 12 FEB 2002

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference S-31147A	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 00/ 08994	International filing date (day/month/year) 14/09/2000	Priority date (day/month/year) 16/09/1999
International Patent Classification (IPC) or national classification and IPC C12N15/82		
Applicant SYNGENTA PARTICIPATIONS AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.


☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

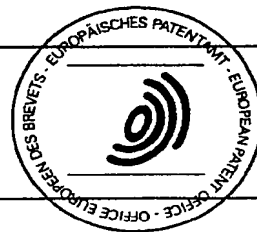
These annexes consists of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

**CORRECTED
VERSION**

Date of submission of the demand 22/03/2001	Date of completion of this report 08.02.02
Name and mailing address of the IPEA/  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer CLAES, BART COUGKE A O M



I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-17 as originally filed

Claims, No.:

1-13 as originally filed

Sequence listing part of the description, pages:

1-15, as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3,5-13
	No:	Claims	1,2,4
Inventive step (IS)	Yes:	Claims	3,5-13
	No:	Claims	1,2,4
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. the following documents are cited:

- D1: DATABASE EM_HTG [Online] EMBL; AC/ID AC005898, 2 November 1998 (1998-11-02) LIN X ET AL.: 'Arabidopsis thaliana 'TAMU' BAC 'T6C20' genomic sequence near marker 'g4532' XP002169552
- D2: DATABASE EM_HTG [Online] EMBL; AC/ID AC007183, 31 March 1999 (1999-03-31) LIU S X ET AL.: 'Arabidopsis thaliana chromosome 1 BAC F9D18 sequence' XP002169553
- D3: DATABASE EM_PL [Online] EMBL; AC/ID AF104920, 11 November 1998 (1998-11-11) STROWMATT C ET AL.: 'The sequence of A. thaliana T9E19' XP002169554
- D4: DATABASE EM_PL [Online] EMBL; AC/ID AF058825, 16 April 1998 (1998-04-16) DANTE M: 'The sequence of A. thaliana F7N22' XP002169555
- D5: DATABASE EM_PL [Online] EMBL; AC/ID AC007209, 7 April 1999 (1999-04-07) LIN X ET AL.: 'Arabidopsis thaliana chromosome II section 74 of 255 of the complete sequence. Sequence from clones F15O11, F14O4, T26C18.' XP002169556
- D6: DATABASE SWALL [Online] EMBL; AC/ID O65225, 1 August 1998 (1998-08-01) DANTE M: 'F7N22.8 protein' XP002169557
- D7: MITTELSTEN-SCHEID ET AL: 'Release of epigenetic gene silencing by trans-acting mutations in Arabidopsis' PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 95, January 1998 (1998-01), pages 632-637, XP002114098 ISSN: 0027-8424 cited in the application
- D8: PASZKOWSKI ET AL: 'Plant genes: the genetics of epigenetics' CURRENT BIOLOGY, GB, CURRENT SCIENCE,, vol. 8, no. 6, 12 March 1998 (1998-03-12), pages 206-208-R208, XP002114102 ISSN: 0960-9822
- D9: STEIMER ANDREA ET AL: 'Endogenous targets of transcriptional gene silencing in Arabidopsis.' PLANT CELL, vol. 12, no. 7, July 2000 (2000-07), pages 1165-1178, XP002169551 ISSN: 1040-4651
- D10: DATABASE EMBLNEW [Online] EMBL; AC/ID AB046429, 5

September 2000 (2000-09-05) KOTANI H ET AL.: 'Arabidopsis thaliana DNA, chromosome 5 centromere region, clone:F26M13.' XP002169558 & KUMEKAWA N ET AL.: 'The size and sequence organization of the centromeric region of Arabidopsis thaliana chromosome 5' DNA RESEARCH, vol. 7, 2000, pages 315-321,

D11: DATABASE EM_PL [Online] EMBL; AC AL163975, 17 April 2000 (2000-04-17) JORDAN N ET AL.: 'Arabidopsis thaliana DNA chromosome 3, BAC clone T15B3' XP002169559

D12: 'Release of epigenetic gene silencing by trans-acting mutations in Arabidopsis', MITTELSTEN-SCHEID ET AL', 'PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US', ",95//00-01-1998,632-637,

2. The sequence of D1 has >90% identity with SEQ ID No 1,2,4,5,8, and 9. The sequence of D2 has >90% identity with SEQ ID No 1-5 and 9. The sequence of D3 has >90% identity with SEQ ID No 4,5 and 8. The sequence of D4 has 99,2% identity over 1956 nucleotides with SEQ ID No 7 and 100% over 3122 nucleotides of SEQ ID No. 27. The sequence of D5 has 96,9% identity over 614 nucleotides with SEQ ID No 6.

The above disclosures are prejudicial for the novelty of claims 1,2 and 4.

In response Applicant has argued that the claimed nucleic acid sequences are much smaller than the genomic nucleic acid molecules disclosed in D1-D5. Therefore these documents should not be considered as anticipating.

In this context the IPEA draws the attention to the fact that the definition of R_B (at least 50 nucleotide residues) renders the length of the nucleic acids undefined. Accordingly, Applicant's argumentation cannot be accepted.

3. The subject matter of claims 3 and 5-13 appear not to have been rendered obvious by the cited art available before the priority date. The priority claim for the present application has not been checked. Consequently the documents cited in the search report as P,X may be relevant for any claimed subject matter not entitled to priority.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/08994

Re Item VIII

Certain observations on the international application

1. Part (b) of claim 8 is vague and undefined and does refer specifically to the sequences as shown useful for executing the method of the claim.

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 March 2001 (22.03.2001)

PCT

(10) International Publication Number
WO 01/20010 A3

- (51) International Patent Classification⁷: C12N 15/82, C07K 14/415, C12Q 1/68, A01H 5/00 (74) Agent: SYNGENTA PARTICIPATIONS AG; Patent and Trademark Dept., Site Rosental, CH-4002 Basel (CH).
- (21) International Application Number: PCT/EP00/08994 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (22) International Filing Date: 14 September 2000 (14.09.2000)
- (25) Filing Language: English
- (26) Publication Language: English (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- (30) Priority Data: 9921964.4 16 September 1999 (16.09.1999) GB
- (71) Applicant (*for all designated States except US*): SYNGENTA PARTICIPATIONS AG [CH/CH]; CH-4058 Basel (CH).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): STEIMER, Andrea [CH/CH]; Solothurnerstrasse 92, CH-4053 Basel (CH). MITTELSTEN SCHEID, Ortrun [DE/CH]; Martin-skirchplatz 15, CH-4051 Basel (CH). PASZKOWSKI, Jerzy [PL/CH]; Blauenweg 10, CH-4224 Nenzlingen (CH).
- Published:**
— with international search report
- (88) Date of publication of the international search report: 17 January 2002
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: TRANSCRIPTIONALLY SILENCED PLANT GENES

(57) Abstract: The invention relates to gene silencing as observed after integration of transgenes into plant genomes. Comparison of transcriptional gene expression between an Arabidopsis line carrying a silent transgene present in multiple copies and its mutant derivative *mom1* impaired in silencing of the transgene revealed two cDNA clones which are expressed in the mutant plants, but not in the parental and not in wild type plants. Both clones are derived from the same family of transcripts referred to as TSI (Transcriptionally Silent Information). Genomic templates encoding TSI are repetitive elements with mainly pericentromeric location and conserved organization among various ecotypes. Transcriptional silencing of the genomic TSI templates is specifically released in the mutant. Transcription of TSI can be used as a marker to identify a defective silencing pathway in a plant.

WO 01/20010 A3

(19) World Intellectual Property Organization
International Bureau



— ET 32754847945



(43) International Publication Date
22 March 2001 (22.03.2001)

PCT

(10) International Publication Number
WO 01/20010, A2

- (51) International Patent Classification⁷: C12N 15/82, (74) Agent: SYNGENTA PARTICIPATIONS AG; Patent and Trademark Dept., Site Rosental, CH-4002 Basel (CH).
C07K 14/415, C12Q 1/68, A01H 5/00
- (21) International Application Number: PCT/EP00/08994 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (22) International Filing Date:
14 September 2000 (14.09.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
9921964.4 16 September 1999 (16.09.1999) GB (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): SYNGENTA PARTICIPATIONS AG [CH/CH]; CH-4058 Basel (CH).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): STEIMER, Andrea [CH/CH]; Solothurnerstrasse 92, CH-4053 Basel (CH). MITTELSTEN SCHEID, Otrun [DE/CH]; Martin-skirchplatz 15, CH-4051 Basel (CH). PASZKOWSKI, Jerzy [PL/CH]; Blauenweg 10, CH-4224 Nenzlingen (CH).
- Published:**
— Without international search report and to be republished upon receipt of that report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: TRANSCRIPTIONALLY SILENCED PLANT GENES

(57) Abstract: The invention relates to gene silencing as observed after integration of transgenes into plant genomes. Comparison of transcriptional gene expression between an Arabidopsis line carrying a silent transgene present in multiple copies and its mutant derivative *mom1* impaired in silencing of the transgene revealed two cDNA clones which are expressed in the mutant plants, but not in the parental and not in wild type plants. Both clones are derived from the same family of transcripts referred to as TSI (Transcriptionally Silent Information). Genomic templates encoding TSI are repetitive elements with mainly pericentromeric location and conserved organization among various ecotypes. Transcriptional silencing of the genomic TSI templates is specifically released in the mutant. Transcription of TSI can be used as a marker to identify a defective silencing pathway in a plant.

WO 01/20010 A2